

**Biomonitoring California**  
**Priority Chemicals Recommended by the Scientific Guidance Panel**  
**April 2010**

The following is a list of priority chemicals recommended by the Scientific Guidance Panel (SGP) for the California Environmental Contaminant Biomonitoring Program (also known as Biomonitoring California). The Program will determine the chemicals that will actually be biomonitored and the appropriate target compound(s) for measurement.

**Metals<sup>1</sup>**

Arsenic  
Cadmium  
Lead  
Mercury

**Phthalates<sup>1</sup>**

Benzylbutyl phthalate (BzBP)  
Dibutyl phthalate (DBP)  
Dicyclohexyl phthalate (DCHP)  
Diethyl phthalate (DEP)  
Di-2-ethylhexyl phthalate (DEHP)  
Di-isobutyl phthalate (DiNP)  
Dimethyl phthalate (DMP)  
Di-n-octyl phthalate (DOP)

**Diesel Exhaust<sup>2</sup>**

**Tobacco Smoke**

Cotinine

**Polycyclic Aromatic Hydrocarbons<sup>1</sup>**

3-Hydroxybenzo[a]pyrene  
6-Hydroxychrysene  
3-Hydroxyphenanthrene

**Environmental Phenols<sup>1</sup>**

Bisphenol A (2,2-Bis[4-hydroxyphenyl]propane)  
Triclosan (2,4,4'-Trichloro-2'-hydroxyphenyl ether)

**Other Chemicals**

Perchlorate

**Cyclosiloxanes** (including but not limited to)<sup>3</sup>

Decamethylcyclopentasiloxane (D5)  
Dodecamethylcyclohexasiloxane (D6)  
Octamethylcyclotetrasiloxane (D4)

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**Organophosphate Insecticides: Dialkyl Phosphate Metabolites and Specific Metabolites<sup>1</sup>**

Acephate  
Azinphos methyl  
Chlorethoxyphos  
Chlorpyrifos  
Chlorpyrifos methyl  
Coumaphos  
Diazinon  
Dichlorvos (DDVP)  
Dicrotophos  
Dimethoate  
Disulfoton  
Ethion  
Fenitrothion  
Fenthion  
Isazophos-methyl  
Malathion  
Methamidophos  
Methidathion  
Methyl parathion  
Naled  
Oxydemeton-methyl  
Parathion  
Phorate  
Phosmet (Imidan)  
Pirimiphos-methyl  
Sulfotep  
Temephos  
Terbufos  
Tetrachlorvinphos

**Pyrethroid Pesticides<sup>1</sup>**

Allethrin  
Cyfluthrin  
Cypermethrin  
*cis*-Cypermethrin  
*trans*-Cypermethrin  
Deltamethrin  
Permethrin  
*cis*-Permethrin  
*trans*-Permethrin  
Pyrethrin I  
Resmethrin

**Other Pesticides**

*p*-Dichlorobenzene (1,4-Dichlorobenzene)  
Dichlorodiphenyltrichloroethane (DDT)  
2,4-Dichlorophenoxyacetic acid (2,4-D), salts and esters

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**Brominated and Chlorinated Organic Compounds Used as Flame Retardants** (including but not limited to)<sup>3</sup>

2,2-Bis(bromomethyl)-1,3-propanediol  
2,2-Bis(chloromethyl)trimethylene bis[bis(2-chloroethyl)phosphate]  
Bis(2-ethyl-1-hexyl)tetrabromophthalate  
Bis(hexachlorocyclopentadieno)cyclooctane (Dechlorane Plus)  
1,2-Bis(2,4,6-tribromophenoxy)ethane  
Chlorendic acid  
Decabromodiphenylethane  
1,2-Dibromo-4-(1,2-dibromoethyl)cyclohexane  
2,3-Dibromopropyl-2,4,6-tribromophenyl ether  
2-Ethyl-1-hexyl-2,3,4,5-tetrabromobenzoate  
N,N'-Ethylenebis(tetrabromophthalimide)  
Hexabromobenzene  
2,2',4,4',5,5'-Hexabromobiphenyl (BB 153)  
Hexabromocyclododecane (HBCD)  
Hexachlorocyclopentadienyl-dibromocyclooctane  
Pentabromoethylbenzene  
Pentabromotoluene  
Polybrominated Diphenyl Ethers (PBDEs)  
2,2',4'-Tribromodiphenyl ether (BDE 17)  
2,4,4'-Tribromodiphenyl ether (BDE 28)  
2,2',4,4'-Tetrabromodiphenyl ether (BDE 47)  
2,3',4,4'-Tetrabromodiphenyl ether (BDE 66)  
2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85)  
2,2',4,4',5-Pentabromodiphenyl ether (BDE 99)  
2,2',4,4',6-Pentabromodiphenyl ether (BDE 100)  
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153)  
2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154)  
2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE 183)  
2,2',3,3',4,4',5,5',6,6' -Decabromodiphenyl ether (BDE 209)  
Short-chain chlorinated paraffins  
Tetrabromobisphenol A (TBBPA)  
Tetrabromobisphenol A bis(2,3-dibromopropyl)ether  
Tetrabromobisphenol A bis(2-hydroxyethyl) ether  
Tetrabromophthalic anhydride  
Tetrakis(2-chloroethyl)dichloroisopentyldiphosphate  
2,4,6-Tribromophenol  
Tris(2-chloroethyl)phosphate  
Tris(1-chloro-2-propyl)phosphate  
Tris(1,3-dichloro-2-propyl)phosphate  
Tris(2,3-dichloro-1-propyl)phosphate

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**Perfluorinated Compounds<sup>1</sup>**

2-(N-Ethylperfluorooctanesulfonamido) acetic acid  
2-(N-Methylperfluorooctanesulfonamido) acetic acid  
Perfluorobutane sulfonic acid  
Perfluorodecanoic acid  
Perfluorododecanoic acid  
Perfluoroheptanoic acid  
Perfluorohexane sulfonic acid  
Perfluorononanoic acid  
Perfluorooctane sulfonic acid  
Perfluorooctane sulfonamide  
Perfluorooctanoic acid  
Perfluoroundecanoic acid

**Polychlorinated Biphenyls<sup>1</sup>**

Coplanar and Mono-*ortho*-Substituted Biphenyls<sup>1</sup>

2,4,4'-Trichlorobiphenyl (PCB 28)  
2,3',4,4'-Tetrachlorobiphenyl (PCB 66)  
2,4,4',5-Tetrachlorobiphenyl (PCB 74)  
3,4,4',5-Tetrachlorobiphenyl (PCB 81)  
2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)  
2,3,3',4',6-Pentachlorobiphenyl (PCB 110)  
2,3',4,4',5-Pentachlorobiphenyl (PCB 118)  
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)  
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)  
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)  
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)  
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)  
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)

Non-Dioxin-Like Polychlorinated Biphenyls<sup>1</sup>

2,2',5-Trichlorobiphenyl (PCB 18)  
2,2'3,5'-Tetrachlorobiphenyl (PCB 44)  
2,2',4,5'-Tetrachlorobiphenyl (PCB 49)  
2,2',5,5'-Tetrachlorobiphenyl (PCB 52)  
2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)  
2,2',4,4',5-Pentachlorobiphenyl (PCB 99)  
2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)  
2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)  
2,2',3,4,4',5' and 2,3,3',4,4',6-Hexachlorobiphenyl (PCB 138 & 158)  
2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146)  
2,2',3,4',5',6'-Hexachlorobiphenyl (PCB 149)  
2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151)  
2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)  
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)  
2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172)  
2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177)

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2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178)  
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)  
2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183)  
2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187)  
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194)  
2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195)  
2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203)  
2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB 199)  
2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl (PCB 206)  
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl (PCB 209)

**Notes**

- <sup>1</sup> All members of the chemical class are not priority chemicals; only the specific chemicals listed are priority chemicals.
- <sup>2</sup> All components of diesel exhaust are priority chemicals.
- <sup>3</sup> All members of the chemical class are priority chemicals, including but not limited to, the chemicals shown.